

I am a GPS user in several personal, business and professional aspects. First, I am a commercial pilot and have aircraft equipped with GPS instrumentation, both portable and fixed. Second, I am a mariner with GPS equipment installed on board a motor vessel, and portable equipment installed on sailing vessels. Third, I use GPS equipment extensively in business travel in automobiles to ensure efficiency in travel.

Formerly, I used LORAN-C equipment installed in aircraft and in vessels initially as a primary area navigation system, then as a back up to GPS signals. The LORAN-C signals were discontinued in February 2010, and while I still have the LORAN-C receivers, they are unusable as backup to GPS.

This leaves 100% reliance on GPS signals. GPS signals are wired into a 406 MHz emergency locator transmitter installed on my aircraft, and in marine applications to allow SARSAT/COSPASS to identify my precise location on first pass reception in the event of a life and death emergency causing activation of EPIRB/ELT devices.

As a physicist and an amateur radio licensee of the FCC, with extensive knowledge of RF physics and electronics, it is clear that there is extensive interference between lightsquared's ill-considered spectrum utilization waiver and its immediate past and present plans to use adjacent spectrum for high powered terrestrial operations. It is mathematically clear, and now experimentally confirmed that Lightsquared will cause massive disruption in existing aviation, land and nautical GPS navigation, potentially delaying Search and Rescue, significantly impacting and disrupting orderly air traffic flow, and is potentially dangerous to life and property, should its signals interfere with SARSAT/COSPASS signaling in the event of emergency.

Lightsquared's willingness to take minor measure to mitigate this severe disruption in an existing service does not pass the sniff test. Their testing even in the lower 10 MHz they presently propose still caused massive disruption of GPS signals. They did not test at full power which would have made the results far worse. The disruption of agricultural and surveying high precision GPS would continue to exist, and interference with supplemental European GPS signals would continue.

Lightsquared's waiver required testing. That testing was performed. The waiver required non-interference. The testing demonstrated massive interference with an existing service covering hundreds of cubic miles. These tests are conclusive. In the FCC's request for comments, Lightspeed agrees to a "standstill" in its use of terrestrial frequencies, which indicates to this commenter that they intend to retain a desire to at a future date "move forward" in their quest to use incompatible spectra adjacent to the GPS allocation, causing potentially devastating and more widespread interference, potentially resulting in loss of life and property.

They wish to "coordinate and share" the cost of fixing a problem of their making. This is

unacceptable and should be rejected as a non-solution, unless Lightsquared is prepared to immediately and prior to any operations, replace all present operational GPS components for all users, entirely at its own expense, including the cost of re-programming/replacing military and civilian GPS transmission facilities and receivers at zero cost to present users, and the United States and its political sub-entities as well as international users of said equipment.

Lightspeed has not proposed this because it knows that its ill-fated and ill-advised venture is not economically feasible. Instead it proposes a nebulous cost sharing agreement to fix an incompatible use of spectrum which it knew or should have known would be incompatible.

Lightsquared now claims to have invested in a terrestrial infrastructure that prima facie was not a compatible use, (equivalent to placing a candle in behind a lighthouse and asking a mariner to see the candle from 20 miles away), and therefore, the entire world should be required to accommodate a poorly designed and physically incompatible operation. This is absurd. Lightsquared should not be allowed to continue its waiver nor begin terrestrial operations as it has demonstrated unequivocally the incompatibility of its equipment with existing essential services.

Further, Lightsquared, for its testing period, presumably has maintained its transmitting equipment in precisely calibrated (frequency, modulation, harmonic radiations, power output, spurious emissions, and so forth) and monitored condition to attempt to put the best possible construction on a test it knew it would fail. In real world operations, there is absolutely no guarantee possible as the laws of physics dictate that the equipment cannot be continuously, economically maintained to exceedingly tight tolerances. This would result in the development over time, of spurious emissions, out of band harmonics, and in-band harmonics which will overload GPS receivers due to the many orders of signal power difference at the receiving stations. Lightsquared has not addressed this issue at all, and how it would be able to instantly detect and disable a transmitter which has drifted out of tolerance prior to an event which would disrupt GPS operations. It cannot do this, because if it did, its network would rapidly become so unreliable as to be unusable.

For these reasons alone, this waiver should be terminated and Lightsquared should not be allowed to operate its proposed network and should be directed to seek appropriate spectrum for its operations which will not massively disrupt communications services which are essential to the safety of life, property and economic endeavors.

I thank you for your attention.